DOCUMENT RESUME

ED 337 504 TM 017 379

AUTHOR Ronacher, Karl; And Others
TITLE The HISD Class of 1991: American College Testing Program (ACT).
INSTITUTION Houston Independent School District, Tex.
PUB DATE 91
NOTE 13p.
PUB TYPE Reports - Research/Technical (143)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Achievement Tests; Black Students; Cohort Analysis; College Bound Students; *College Entrance Examinations; High School Graduates; High Schools; *High School Seniors; Mexican Americans; School Districts; *Scores; *Test Results; White Students
IDENTIFIERS *American College Testing Program; *Houston Independent School District TX

ABSTRACT

This report analyzes the performance of students in the graduating class of 1991 of the Houston (Texas) Independent School District (HISD) who took the American College Testing Program (ACT) test. Eleven percent of the class of 1991, 796 students, graduated with ACT scores. Houston White, Black, and Mexican American students obtained higher average ACT scores than did such students nationally. Black students were a larger portion of the test group in Houston, at 35%, than for the nation as a whole (9%). A similar difference was found for Mexican Americans at 15% in Houston, compared with 3% nationally. Students who took more than the recommended number of college preparatory classes consistently outperformed those who took fewer than the recommended core classes. A large number of Houston students expressed satisfaction with their honors programs and accelerated courses, their instruction, and the number of classes they were offered. Two graphs and eight tables present test results. (SLD)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED387504

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

☒ This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

KATHRYN S. SANCHEZ

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

The HISD Class of 1991: American College Testing Program (ACT)

Ronacher, Karl, MBA
Gibler, Edward A., M.A.
Bridges, James T., Ph.D.
Sanchez, Kathryn S., Ed.D.

HISD RESEARCH & EVALUATION
HOUSTON INDEPENDENT SCHOOL DISTRICT

TM017379

BEST COPY AVAILABLE

HOUSTON INDEPENDENT SCHOOL DISTRICT
MEMBERS OF THE BOARD OF EDUCATION

Ms. Paula Arnold, *President*
Mr. Wiley E. Henry, *Vice-President*
Mr. Felix Fraga, *Secretary*
Ms. Olga Gallegos, *Assistant Secretary*
Dr. Melody Ellis
Mr. Ron Franklin
Dr. Don McAdams
Dr. Cathy Mincberg
Dr. Rod Paige

Dr. Frank R. Petruzielo, *Superintendent of Schools*

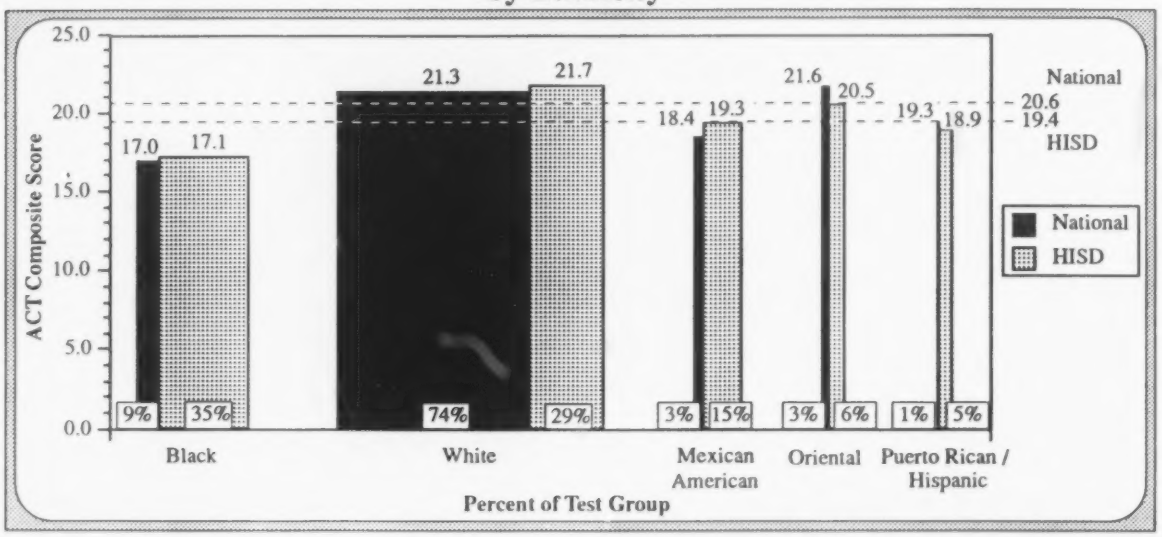
The HISD Graduating Class of 1991: American College Testing Program (ACT)

Executive Summary

The American College Testing Program (ACT) consists of a student profile, the ACT interest inventory, and four timed tests of educational development. The results are used by colleges for admissions and placement purposes. Eleven percent of HISD's class of 1991, or 796 students, graduated with ACT scores.

The graph below gives an overview of HISD's performance. The *height* of each column represents the average score for that group. The *width* of each column represents the proportion of the HISD and national test groups made up by each ethnicity, and therefore the relative *weights* applied to each score when determining the overall score.

1991 ACT Composite Scores / Percent of Test Group by Ethnicity



- HISD's Black students, White students, and Mexican American students obtained higher average ACT scores than such students nationally.
- Black students made up a larger proportion of the test group for HISD (35%) than for the nation (9%). A similar difference pertains to the proportion of Mexican Americans in the HISD test group (15%) when compared to the national group (3%).
- Average scores for White students are higher than averages for Blacks and Mexican Americans at both the district and the national level. The higher average score for White students will be weighted much more in determining the national overall average (74% of the weight) than HISD's overall average (29% of the weight). Thus, similar scores for each ethnicity group at the national and district levels would produce a lower overall average score for HISD.

Other points of interest are as follows:

- Average scores tend to increase by income level.
- HISD students who took more than the recommended number of college preparatory classes consistently outperformed those students who took fewer than the recommended core classes.
- A large portion of HISD students expressed satisfaction about their honors program and accelerated courses (60%), their classroom instruction (54%), and the variety of courses they were offered (54%).

Introduction

This report analyzes the performance of students in HISD's graduating class of 1991 who took the American College Test (ACT). The first section describes the ACT. The second section (p. 3) points out several potential misuses and misinterpretations of ACT scores aggregated by state, district or school. The third section (p. 4) describes the student population that took the test, and the fourth section (p. 5) focuses on test results.

Section I
The American College Testing Program (ACT)

The American College Testing Program consists of a student profile section, the ACT interest inventory, and four timed tests of educational development. The results are used by colleges for admissions and placement purposes.

The ACT consists of tests in four areas: English, Mathematics, Reading and Science Reasoning. In addition, the ACT includes a composite score which combines the individual tests into one measure. Each of these tests contains multiple-choice questions that offer either four or five answer choices from which the correct, or best, answer is to be chosen.

The English Test is a 75-item, 45-minute test that measures the understanding of the conventions of standard written English (punctuation, grammar and usage, and sentence structure) and of rhetorical skills (strategy, organization, and style). Spelling, vocabulary, and rules of grammar are not tested.

The ACT Mathematics Test is a 60-item, 60-minute test designed to assess the mathematical skills students have typically acquired in courses taken up to the beginning of grade 12. The test presents multiple choice items that require the use of reasoning skills to solve practical problems in mathematics. Knowledge of basic formulas and computational skills are assumed as background for problems, but complex formulas and extensive computation are not required.

The Reading Test is a 40-item, 35-minute test that measures reading comprehension as a product of skills in referring and reasoning. That is, the test items require students to derive meaning from several texts by (1) referring to what is explicitly stated and (2) reasoning to determine implicit meanings and to draw conclusions, comparisons, and generalizations. The test comprises four prose passages that are representative of the level and kinds of text commonly encountered in college freshman curricula. Each passage is accompanied by a set of multiple-choice test items. These items do not test the rote recall of facts from outside the passage, isolated vocabulary items, or rules of formal logic; rather the test focuses upon the complementary and mutually supportive skills that readers must bring to bear in studying written materials across a range of subject areas.

The Science Reasoning Test is a 40-item, 35-minute test that measures the interpretation, analysis, evaluation, reasoning, and problem-solving required in the natural sciences. The test presents seven sets of scientific information, each followed by a number of multiple-choice test items. The scientific information is conveyed in one of three different formats: data representation, research summaries, or conflicting viewpoints. The items require the recognition and understanding of, and concepts related to, the provided information; the critical examination of the relationship between the information provided and conclusions drawn or hypotheses developed; and generalization from given information that gain new information, draw new conclusions, or make predictions.

Section II
Avoiding the Misuse and Misinterpretation of Aggregate Scores

When examined over time, ACT scores provide a means of assessing how well school districts or individual campuses are preparing students educationally for college. In a more important sense, ACT scores are also useful for predicting student academic performance in college. However, because the ACT is an imperfect instrument for measuring the myriad variables that are related to collegiate academic readiness and success, ACT has published recommendations on the appropriate uses of test scores.

The first recommendation is that ACT test scores should not be used as the sole criterion by college admissions officials for making decisions that will affect the lives of individual students. Second, test scores should not be used in aggregate to rank or judge the educational worthiness of teachers, campuses, school districts, or states. Since the ACT test scores arise from self-selected, nonrepresentative samples of high school students (not all students take the test and the backgrounds of those who do differ by institution), rankings, comparisons, and generalizations concerning the performance of different educational entities are inappropriate, misleading and inaccurate.

Section III
The HISD Test Group

This section describes the students in HISD who took the ACT. The following table gives a breakdown by gender of 1991 high school graduates who had ACT scores.

Students Taking ACT Tests by Gender

	National		Texas		HISD	
Gender	N	%	N	%	N	%
Male	361,276	45	22,179	44	304	38
Female	435,707	55	28,057	56	492	62
Total	796,983		50,236		796	

The 796 HISD students graduating with ACT scores represented 11% of the HISD graduating class of 1991. Based on estimates, Texas (29%) and the nation (32%) had a larger proportion of graduates taking the ACT.

HISD had a smaller proportion of men (38%) in its ACT test group than the nation (45%) or Texas (44%).

The following table gives a breakdown by ethnicity of 1991 high school graduates who had ACT scores. Percents refer to the proportion of the test group made up by each ethnicity.

Students Taking ACT Tests by Ethnicity

	National		Texas		HISD	
Ethnicity	N	%	N	%	N	%
Black	72,681	9	4,216	8	282	35
American Indian/Alaskan	9,358	1	256	1	2	0
White	588,060	74	29,079	58	234	29
Mexican American	23,837	3	9,594	19	118	15
Oriental	20,854	3	1,321	3	48	6
Puerto Rican/Hispanic	11,135	1	1,339	3	36	5
Other	12,159	2	569	1	14	2
Prefer No Response	13,215	2	697	1	15	2
Did Not Respond	45,684	6	3,165	6	47	6

HISD had a higher proportion of Black students (35%) in its ACT test group than the nation (9%) or Texas (8%), and a lower proportion of White students (29%) than the nation (74%) or Texas (58%). The Mexican American group and the Puerto Rican/Hispanic group also made up a larger proportion of the test group in HISD than in the nation.

Satisfaction/Dissatisfaction with High School Program

When registering for the ACT, students complete the Student Profile Section. One aspect of this profile measures student satisfaction with the education they have received in high school. A large portion of HISD students expressed satisfaction about their honors program and accelerated courses (60%), their classroom instruction (54%), and the variety of courses they were offered (54%). The aspects of their high school experience which received the most frequent negative responses were school rules and regulations (33%), guidance services (28%), and laboratory facilities (24%).

Section IV
ACT Test Results

Demographic Perspectives

The discussion which follows isolates the ACT performances of various groups broken down by factors which are brought to the school experience. The table below presents mean ACT composite scores by ethnicity for HISD, Texas and the nation.

Mean 1991 ACT Composite Scores by Ethnicity

Ethnic Group	National	Texas	HISD	Difference (HISD-Nation)
Black	17.0	17.1	17.1	0.1
American Indian/Alaskan	18.2	19.1	21.5	3.3
White	21.3	21.1	21.7	0.4
Mexican American	18.4	17.9	19.3	0.9
Oriental	21.6	21.5	20.5	-1.1
Puerto Rican/Hispanic	19.3	18.5	18.9	-0.4
Other	19.2	19.4	18.4	-0.8
Prefer No Response	20.8	20.3	21.0	0.2
Did Not Respond	20.3	18.8	21.1	0.8

HISD's Black students, White students, and Mexican American students obtained higher average ACT scores than such students nationally.

When average scores for the total test groups are reported, however, this important perspective is lost. The most common way of reporting ACT scores is in tables and graphs such as the two that follow:

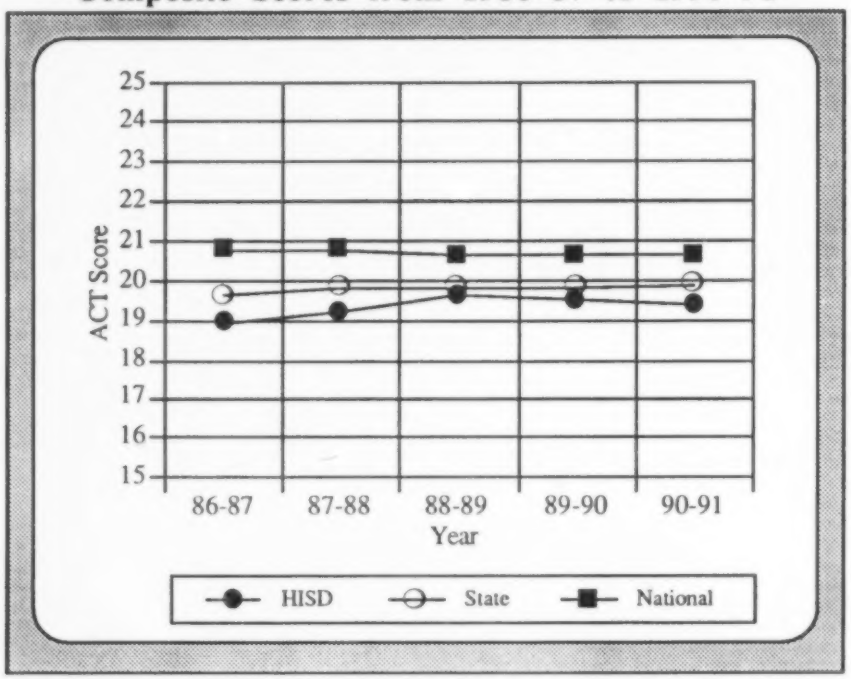
Average ACT English, Mathematics, and Composite Scores for the Total Group

Subject Year	National	Texas	HISD	Difference (HISD-Nation)
English				
1989–90	20.5	19.8	19.1	-1.4
1990–91	20.3	19.7	19.2	-1.1
Mathematics				
1989–90	19.9	19.4	19.5	-0.4
1990–91	20.0	19.5	19.2	-0.8
Composite				
1989–90	20.6	19.8	19.5	-1.1
1990–91	20.6	19.9	19.4	-1.2

From such presentations, the conclusion is often drawn that the quality of education in HISD is inferior to that of the nation as a whole. But we have already seen that the three largest ethnic groups taking the tests in HISD score above the national average. To follow up: how do we reconcile the facts that, on the one hand, the three largest ethnic groups in HISD scored above the national average, but on the other hand, HISD as a whole has a score below the national average?

A similar question arises if the average scores at the three levels of aggregation — nation, state, and district — are plotted over time, as in the graph below.

Trend for HISD, Texas, and National ACT Composite Scores from 1986–87 to 1990–91



When only the average for the total test groups are looked at, HISD does score lower than Texas or the nation.

The answer to this riddle becomes evident when the make-up of the various test groups at the different levels of aggregation is considered. Black students made up a higher proportion of the test group for HISD (35%) than for the nation (9%) or Texas (8%). A similar difference pertains to the proportion of Mexican Americans in the HISD test group (15%) when compared to the national group (3%). These differences in the test group populations, when combined with the difference between the average score for White students in HISD (21.7) and Blacks (17.1) and Mexican Americans (19.3), explains why the composite score for the HISD test group was lower than the national average.

In the final analysis, the comparison of average scores for *dissimilar test groups* misleads more than it clarifies. The proper conclusion to draw from the above discussion is not that HISD has an inferior educational system than the nation as a whole, but that, as shown by the gaps between the average scores of white students and the average scores of minorities, neither the nation, the state of Texas, nor HISD has yet devised an approach to education that prepares large groups of minority students to succeed at college level work, as measured by performance on college entrance examinations.

The following table gives a breakdown of average ACT scores by gender.

Mean 1991 ACT Scores by Gender

Test	National			Texas			HISD			Difference (HISD-Nation)	
	Male	Female	Male - Female	Male	Female	Male - Female	Male	Female	Male - Female	Male	Female
English	19.8	20.7	-0.9	19.0	20.2	-1.2	18.6	19.6	-1.0	-1.2	-1.1
Mathematics	20.6	19.4	1.2	20.0	19.1	0.9	19.8	18.9	0.9	-0.8	-0.5
Reading	21.3	21.1	0.2	20.1	20.3	-0.2	19.3	19.9	-0.6	-2.0	-1.2
Science Reasoning	21.3	20.1	1.2	20.3	19.4	0.9	19.4	18.9	0.5	-1.9	-1.2
Composite	20.9	20.4	0.5	20.0	19.9	0.1	19.4	19.4	0.0	-1.5	-1.0

In HISD, women scored higher in English and reading while men scored higher in math and science. When comparing the results of the ACT testing sections by gender, HISD performed below the nation in English, math, reading, science reasoning, and by composite score.

The table below gives average ACT composite scores for different income levels.

Mean 1991 ACT Composite Scores By Income Level

Income	National	Texas	HISD	Difference (HISD-Nation)
less than $6,000	17.3	16.7	16.3	-1.0
$6,000–11,999	18.6	17.9	18.5	-0.1
$12,000–17,999	19.4	18.7	18.0	-1.4
$18,000–23,999	19.9	19.2	18.4	-1.5
$24,000–29,999	20.4	19.8	18.5	-1.9
$30,000–35,999	20.7	20.1	19.1	-1.6
$36,000–41,999	21.0	20.5	19.8	-1.2
$42,000–49,999	21.4	21.0	20.9	-0.5
$50,000–59,999	21.7	21.2	20.3	-1.4
$60,000 and over	22.4	22.0	22.7	0.3
No Response	20.5	19.3	20.4	-0.1

Average scores tended to increase by income level at all three levels of aggregation. That is to say, the approach to education across the nation has not yet come to terms with preparing large groups of poorer students for college level work.

Score Distributions

As useful as average scores are for making quick comparisons, they mask the variation in performance within each level of aggregation. A better grasp of the performance of students in any institution or set of institutions may be obtained by studying the distribution of scores. The tables below give the percentage of students scoring in each of four score intervals, for the nation, Texas, and HISD. It can easily be seen from these tables that the encapsulation of scores in a single number fails to grasp the variety of performances at each level of aggregation.

Percentages of Scores in Four Intervals

National

Score Range	English	Math	Reading	Science Reasoning	Composite
27–36	13	11	20	11	11
22–26	27	23	24	28	28
19–21	21	21	19	26	25
1–18	39	45	36	34	35

State

Score Range	English	Math	Reading	Science Reasoning	Composite
27–36	11	8	16	8	9
22–26	25	21	22	24	25
19–21	20	22	19	26	25
1–18	44	49	43	42	42

HISD

Score Range	English	Math	Reading	Science Reasoning	Composite
27–36	10	7	16	6	8
22–26	24	21	19	21	24
19–21	18	20	17	21	21
1–18	47	51	49	52	47

HISD and Texas had greater proportions of students with scores in the 1–18 interval than the nation in every subject category, and thus, a larger proportion of lower scoring students; however, HISD also had quite a few students at the top of the score range.

Educational Preparation

The score breakdowns in the demographics section dealt with variables over which a school has little or no control. What a school can affect, however, are the types of courses that students aspiring to a college career take and the number of challenging courses they take. The table below gives a breakdown of ACT averages by whether or not students have completed a core of recommended college preparation courses.

Average ACT Scores by Level of Academic Preparation for Different Ethnic Groups in HISD

	Black		White		Mexican American		Oriental		Puerto Rican/ Hispanic	
Academic Preparation	Core or More	Less than Core	Core or More	Less than Core	Core or More	Less than Core	Core or More	Less than Core	Core or More	Less than Core
	N=172	N=110	N=177	N=56	N=89	N=28	N=41	N=6	N=28	N=8
English	18.2	14.1	22.8	19.4	19.9	16.2	19.8	18.0	20.1	14.9
Math	18.5	14.9	21.6	18.3	20.3	16.8	22.9	19.7	19.8	17.4
Reading	19.0	14.3	23.1	20.6	19.9	16.3	19.8	19.2	18.9	17.8
Science Reasoning	18.2	15.6	21.7	19.0	19.4	17.5	20.0	18.8	19.0	16.4
Composite	18.6	14.8	22.4	19.5	20.1	16.9	20.8	19.0	19.5	16.8

HISD students taking more than the recommended number of core classes consistently out-performed those students who took fewer than the recommended number of core classes.

HISD
RESEARCH &
EVALUATION
HOUSTON INDEPENDENT SCHOOL DISTRICT